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- X. "Notes on Variations in the origin of the Long Buccal Branch of the Fifth Cranial Nerve." By WM. TURNER, M.B. (Lond.), Professor of Anatomy, University of Edinburgh. Communicated by Dr. SHARPEY. Received June 9, 1868.

In the *Journal of Anatomy and Physiology*, November 1866, I gave a description of a specimen from the dissecting-room in which the long buccal nerve, instead of proceeding from the third division of the fifth nerve, arose from the superior maxillary trunk in the spheno-maxillary fossa.

This transposition of the origin of the nerve from its proper trunk to one which is sensory in function, seemed to me to be a strong additional argument, and from a new point of view, to those which had previously been urged by various writers on physiological and pathological grounds, in favour of the purely sensory nature of this nerve.

In a subject dissected during the month of March of the present year, variations of an interesting kind in connexion with this nerve were observed, which afford additional proof of its sensory nature.

The occurrence within so short a period of two subjects presenting variations of so important a nature in their bearings on the much disputed question of the physiology of this nerve, leads me to offer these notes to the Royal Society, in the hope that, if inserted in its Proceedings, the attention of anatomists may be more generally directed to the matter, and lead perhaps to further observations of a similar nature.

When the superior maxillary trunk was exposed on the left side of the head in the spheno-maxillary fossa, in addition to the orbital and palatine nerves usually arising from it in this locality, a branch of some size arose, which descended behind the posterior surface of the superior maxilla. In its course it gave origin to two distinct superior dental nerves, which entered foramina in the bone for the supply of the upper teeth. The upper of these dental nerves was joined immediately before entering its foramen by another superior dental branch, arising independently from the superior maxillary trunk. After giving origin to these superior dental nerves, the branch, now considerably diminished in size, passed downwards to the cheek, where some of its fibres pierced the substance of the buccinator muscle at the spot where it is usual for the long buccal nerve to enter it, whilst others formed a distinct anastomosis with branches of the portio dura in the fat over the surface of that muscle. No buccal nerve from the inferior maxillary was observed on this side. This arrangement corresponds almost exactly to the specimen above referred to, as described in the *Journal of Anatomy and Physiology*, and the two are, I believe, the only examples of the kind up to this time recorded.

On the right side of the same subject a different arrangement was observed. From the superior maxillary trunk in the spheno-maxillary fossa, in addition to its proper branches, two slender nerves arose, which passed obliquely downwards and forwards through the mass of fat beneath the ramus

of the jaw and the anterior border of the masseter to the fat of the cheek, where they anastomosed with branches of the portio dura, and doubtless ended in the integument. These nerves represented, I believe, the branches which the long buccal nerve usually gives off before it enters the buccinator muscle, and were the only parts of that nerve which arose on this side of the head from the second division of the fifth. The remaining part of the long buccal nerve arose from the inferior maxillary trunk and entered the buccinator in the usual locality. When followed into the substance of the muscle, it passed obliquely and gave off branches of great delicacy, many of which were traced into the mucous membrane of the cheek. Followed upwards to its origin, the long buccal nerve was seen to divide at the foramen ovale into two parts, of which one was traced without difficulty directly into the Gasserian ganglion, and must therefore be regarded as sensory; the other, connected with the fasciculus, from which the temporal and masseteric nerves arose, was followed upwards to the motor root of the fifth. Almost immediately after receiving this offshoot from the motor root, the buccal nerve gave origin to the nerve of supply for the external pterygoid muscle, and the fibres of the motor root were to all appearance prolonged directly into this pterygoid branch, whilst the fibres from the sensory ganglion could be distinctly traced into the proper buccal part of the nerve.

There can be no doubt that in this case the entire buccal nerve on the left side was purely sensory. There can also be no doubt that those branches arising from the superior maxillary trunk on the right side, which passed to the surface over the buccinator, were purely sensory. The remaining part of the right nerve also, though connected with the motor root of the fifth, yet parted to all appearance with its motor fibres before it proceeded to its destination.

I may take this opportunity of referring to a case of variation in the origin of the buccal nerve, which, so far as I know, has not yet been referred to by British anatomists, and which gives additional evidence of the sensory nature of the nerve. In the *Bulletins de la Soc. Anat. de Paris*, 1853, S. 109 (quoted in Krause und Telgmann '*Die Nerven-Varietäten*,' Leipzig, 1868), M. Gaillet describes the nerve as arising directly from the Gasserian ganglion, without having any connexion with the motor root, then passing out of the cranium through a special foramen midway between the F. rotundum and F. ovale, and lying between the great wing of the sphenoid and external pterygoid muscle on its course to its distribution.

Variations in the usually described arrangements of the structures in the human body have, as a rule, been studied either from their bearings on questions connected with practical medicine and surgery, or from the light which they throw on the development and morphology of parts and organs, but, as these cases prove, their study is not without interest from the teleological point of view.